

Title (en)

REAL-TIME REMOTE CONTROL OF VEHICLES WITH HIGH REDUNDANCY

Title (de)

ECHTZEIT-FERNSTEUERUNG VON FAHRZEUGEN MIT HOHER REDUNDANZ

Title (fr)

COMMANDE À DISTANCE EN TEMPS RÉEL DE VÉHICULES À REDONDANCE ÉLEVÉE

Publication

**EP 3737595 A4 20210922 (EN)**

Application

**EP 19738534 A 20190109**

Priority

- US 201862615377 P 20180109
- US 2019012934 W 20190109

Abstract (en)

[origin: US2019210564A1] Described are devices, systems and methods for real-time remote control of vehicles with high redundancy. In some embodiments, two copies of at least one control command are received using two different wireless communication protocols, and are compared. The at least one control command is executed when the two copies are in agreement, but is rejected when the two copies differ. In other embodiments, additional wireless communication protocols may exist to provide a redundant mode of communication when one of the two different wireless communication protocols are unavailable. In yet other embodiments, redundant GPS units may be used to determine availability of any of the communication protocols, and relevant control commands may be downloaded in advance to circumvent the lack of coverage.

IPC 8 full level

**B60W 50/00** (2006.01); **G05D 1/00** (2006.01); **G06F 21/30** (2013.01); **H04L 29/06** (2006.01); **H04L 29/08** (2006.01); **H04W 4/44** (2018.01); **H04W 12/06** (2021.01); **H04W 88/06** (2009.01)

CPC (source: EP US)

**B60R 25/30** (2013.01 - US); **G05D 1/0022** (2024.01 - EP US); **G05D 1/0077** (2024.01 - EP US); **H04L 67/52** (2022.05 - EP); **H04W 4/44** (2018.02 - EP); **H04W 4/80** (2018.02 - EP US); **H04W 84/042** (2013.01 - US); **H04W 84/12** (2013.01 - US); **H04W 88/06** (2013.01 - EP)

Citation (search report)

- [A] US 2017083026 A1 20170323 - SCHMIDT KYLE KENNETH [US], et al
- [A] JP 2009272906 A 20091119 - MITSUBISHI ELECTRIC CORP
- See also references of WO 2019140005A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

**US 11312334 B2 20220426**; **US 2019210564 A1 20190711**; AU 2019206509 A1 20200723; CN 112004729 A 20201127; CN 112004729 B 20231201; EP 3737595 A1 20201118; EP 3737595 A4 20210922; EP 3737595 B1 20231227; EP 3737595 C0 20231227; EP 4283430 A2 20231129; EP 4283430 A3 20240124; US 2022242371 A1 20220804; WO 2019140005 A1 20190718

DOCDB simple family (application)

**US 201916243821 A 20190109**; AU 2019206509 A 20190109; CN 201980007921 A 20190109; EP 19738534 A 20190109; EP 23204126 A 20190109; US 2019012934 W 20190109; US 202217660519 A 20220425